REMARKS

Claims 1-6, 10-15, 18, 20, 21, 23-27, and 32-35 are currently pending. The amendment to claims 5 and 15 is supported on page 14, lines 1-7, of the specification. The amendment to claims 6 and 18 is supported on page 10, lines 6-19, page 11, line 3, through page 12, line 9, and page 12, lines 22-23, of the specification. The support for new claims 32-35 is found in page 7, line 4-6, and page 10, line 21, of the specification. It is respectfully submitted that no new matter has been added.

The specification of the amendment has been made to accord lines 4-7 of page 14 of the specification with the equations in lines 1-3 of page 14 of the specification. As provided by the three equations, route (1-6-7-4) has a smaller **maximum** connectivity metric when compared to route (1-2-3-4). It is respectfully submitted that no new matter has been added and that this amendment provides a clarification to the specification.

Claims 5, 6, 15, and 18 were rejected under 35 U.S.C. 112, second paragraph. Claims 5 and 15 have been amended to recited the "smallest maximum connectivity metric value." Claims 6 and 18 have been amended to correct typographical errors and to define terms. It is respectfully requested that the Patent Office remove its rejections of claims 5, 6, 15, and 18 under 35 U.S.C. 112, second paragraph.

The Patent Office rejected claims 1-4, 11-14, 21, and 23-26 under 35 U.S.C. 103(a) as being unpatentable over Matthews, U.S. Patent No. 6,084,858, in view of Verbiest, U.S. Patent No. 4,912,702, and further in view of Larsson, U.S. Patent No. 6,535,498.

Matthews discloses a method for selecting a communication path in distributing a communication load over multiple paths (abstract). Matthews describes the prior art in Figure 1 as a fully meshed network topology having Secure Fast Packet Switches (SFPS) in which each SFPS has four ports; some ports labeled A for access for attachment to end users to provide network access security and connection services and other ports labeled N for attachment to communication devices which group a number of users together (col. 1, lines 50-65). Matthews discloses a solution that is applicable in general to any routing problem in a mesh network such as a communication network, whether or not the network is connection-oriented (col. 4, lines 35-37).

In connection-oriented communications, a logical association is established between the

source and the destination, so that several separate groups of data ("a data flow") may be sent along the same path that is defined by the logical association. This is distinguished from connectionless communications, in which the source transmits data to the destination without prior coordination. In connectionless communications, each frame of data is transmitted node-by-node independently of any previous frame. Bridges and routers are commonly used in connectionless communications. (Dobbins, col. 7, lines 48-58; Dobbins incorporated by reference in Matthews, col. 10, lines 20-24.)

Although Matthews discloses "The solution is applicable in general to any routing program in a mesh network such as a communication network, where or not the network is connection-oriented" (col. 4, lines 34-37), Matthews appears to consider that communications networks which are not connection-oriented (col. 1, lines 38-48) are connectionless (col. 1, lines 22-37). Although Matthews refers to Figure 1 as prior art, Matthews discloses switches (col. 4, lines 25 and 58, col. 5, line 21), routers/ gateways (col. 4, line 59), switching technology (col. 10, line 26), Network Management Server (col. 4, lines 23 and 34, col. 5, lines 22, 43, 52, col. 10, line 18), but does not appear to disclose or fairly suggest wireless communications or be open to modification for use in a wireless communication system.

Verbiest discloses calculating the means value and variance of a data packet input stream (col. 5, lines 57-66) and does not, as Matthews and Larsson do not, appear to disclose or fairly suggest calculating a connectivity metric defined as a ratio of a maximum link bandwidth to the estimated link bandwidth. Verbiest does not disclose or fairly suggest a connectivity metric defined as a ratio of a maximum link bandwidth to the estimated link bandwidth, but disclose the output bandwidth B2 is compared against the maximum bandwidth B (col. 5, line 67, through col. 6, line 27) where the maximum bandwidth is a threshold.

On page 7, lines 7-10, of the Office Action dated June 16, 2006, the Patent Office asserted "it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the method is used in a wireless network, the motivation being in order to facilitate routing in a wireless network by finding the most efficient route for data transmission." This assertion appears to attempt to provide a rationale for modifying Larsson by Matthews; however, Matthews has been designated as the base reference. Matthews, whether connection-oriented or connectionless, appears directed to communication networks with end

systems and switches and/or routers in fixed networks and not to ad-hoc wireless networks.

Thus, claims 1-4, 11-14, 21, and 23-26 are allowable over the prior art of record.

The Patent Office rejected claims 10 and 20 under 35 U.S.C. 103(a) as being unpatentable over Matthews, in view of Verbiest and Larsson, and further in view of Hiroyuki, U.S. Published Patent Application No. 2003/0043746.

The Patent Office asserted (page 11, lines 3-14, of the Office Action dated June 16, 2006) "Hiroyuki et al disclose that finding an optimum path between nodes in a network comprises using a metric to compare paths. The metric can be the number of hops or the bandwidth, the goal of which is to minimize the metric in choosing a path. Refer to Paragraph 0006 and 0051. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that distributing information concerning the calculated connectivity metric comprises inserting the value of the connectivity metric into a routing protocol packet in conjunction with the value of a hop number, the motivation being that the ratio of maximum link bandwidth link bandwidth to estimated link bandwidth can also be used as a metric to determine the optimum path, in addition to the number of hops. A path is more likely to be selected if its estimated link bandwidth does not exceed the maximum link bandwidth, in order to support the data packet transmission." (page 11, lines 3-14, of the Office Action mailed June 16, 2006).

Hiroyuki discloses "The Djikstra method is a way to find out a path having a minimum metric between an entrance node used to guide a packet or a like into a network and an exit node used to guide the packet or the like outside the network. The metric is an index used when a path is found on a network and, as the metric, for example, a number of hops (number of nodes through which a packet or a like passes), delay time, bandwidth, costs, or a like are used" (paragraph 0006) and "In order to surely select the path pair from a network, a constraint condition to obtain two paths and constraint condition required to put these two paths into a state of disjoint relation. Also, if there is a limitation in processing capability (capacity) of a node or a link, a constraint condition to have a metric value in each route fall within a specified range is made necessary. Moreover, if it is necessary to designate a reference (which minimizes, for example, a bandwidth, delay, line cost or a like), on a basis of which the path pair is to be selected" (paragraph 0051).

Neither cited paragraph of Hiroyuki discloses or suggests the limitation of inserting the

value of the connectivity metric into a routing protocol packet in place of the value of a hop number nor determining a router having the maximum link bandwidth and a minimum traffic load.

Hiroyuki does not remedy the deficiencies of Matthews, Verbiest, and Larsson.

Claims 10 and 20 are allowable at least for the reasons claims 1-6, 10-15, 18, 20, 21, and 23-27 are allowable.

The Patent Office rejected claim 27 under 35 U.S.C. 103(a) as being unpatentable over Matthews in view of Verbiest and Larsson and further in view of Momosaki, U.S. Published Patent Application No. 2003/0119538.

Applicant's claimed invention "provides a routing protocol to enable a mobile node to bypass a heavily loaded node, and find a route having a larger bandwidth" (page 7, lines 8-12, of Applicant's specification).

The Patent Office asserted that "Momosaki et al disclose estimating the amount of bandwidth needed in a system by determining the node's status (master or slave) and the number of the node's slaves" (page 12, lines 18-20, of the Office Action mailed June 16, 2006) and cites paragraphs 0075-0076 of Momosaki as support. Although Momosaki, in paragraphs 0075-0076, does disclose "the upstream side device becomes a master and the downstream side device becomes a slave, and at most seven slaves can be connected to a single master," "it is possible to reduce the number of slaves that can be connected according to the necessary throughput," and "the number of slaves that can be connected is limited to at most four," Momosaki does not disclose or suggest "estimating includes considering a node's status and the number of the node's Slaves" (claim 6), "said first computer program code segment considers a node's status and the number of the node's Slaves when estimating the link bandwidth of the node" (claim 16), nor "consideration of a number of, and the role played by, other nodes" (claim 27). Momosaki does not disclose that a node's status is considered in estimating.

Momosaki does not remedy the deficiencies of Matthews, Verbiest, and Larsson.

Thus, claim 27 is allowable over the prior art of record.

Claims 5, 6, 15, and 18 were not rejected by prior art. Thus, claims 5, 6, 15, and 18 are believed to contain allowable subject matter or to be allowable.

The Patent Office is respectfully requested to reconsider and remove the rejections of the

claims under 35 U.S.C. 103(a) based on Matthews et al., in combination with Verbiest, Momosaki, Larsson, and/or Hiroyuki, and to allow all of the pending claims 1-6, 10-15, 18, 20, 21, 23-27, and 32-35 as now presented for examination. An early notification of the allowability of all of the pending claims is earnestly solicited.

S.N.: 10/606,437
Art Unit: 2616

Respectfully submitted:

Walter J. Malinowski August 18, 2006

Walter J. Malinowski Date

Reg. No.: 43,423

Customer No.: 29683

HARRINGTON & SMITH, LLP

4 Research Drive

Shelton, CT 06484-6212

Telephone: (203)925-9400, extension 19

Facsimile: (203)944-0245

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. BOX 1450, Alexandria, VA 22313-1450.

August 23, 2006 [signature]

Date Name of Person Making Deposit